The motivating aspects of technology

Mary Ascher
University of Northern Iowa
The motivating aspects of technology

Abstract
Motivation is the most challenging and complex issue facing educators today. There are two types of motivation: intrinsic and extrinsic. To foster life-long learning educators need to stimulate intrinsic motivation in their students. Three factors that stimulate and sustain intrinsic motivation include personal relationships, shared responsibility, and safety. The expectancy theory also identifies elements affecting motivation. Technology is a tool that fits into all of these factors to capture the students' motivation.
THE MOTIVATING ASPECTS
OF
TECHNOLOGY

A Graduate Review
Submitted to the
Division of Educational Technology
Department of Curriculum and Instruction
In Partial Fulfillment
Of the Requirements for the Degree
Master of Arts in Education
UNIVERSITY OF NORTHERN IOWA

By
Mary Ascher
August, 2003
This Review by: Mary Ascher

Titled: The Motivating Aspects of Technology

has been approved as meeting the research requirement for the
Master of Arts in Education.

Leigh E. Zeitz

Date approved
8/29/03

Terri McDonald

Date approved
8/29/03

Rick Traw

Date approved
8/29/03

Leigh E. Zeitz
Graduate Faculty Reader

Terri McDonald
Graduate Faculty Reader

Rick Traw
Head, Department of Curriculum and Instruction
Abstract

Motivation is the most challenging and complex issue facing educators today. There are two types of motivation: intrinsic and extrinsic. To foster life-long learning educators need to stimulate intrinsic motivation in their students. Three factors that stimulate and sustain intrinsic motivation include personal relationships, shared responsibility, and safety. The expectancy theory also identifies elements affecting motivation. Technology is a tool that fits into all of these factors to capture the students’ motivation.
Introduction

Motivation is, without question, the most complex and challenging issue facing educators in the classroom today as they develop instruction. Many educators are looking for a single and simple answer to this problem. As an educator, the author has struggled with this issue in her classroom. At school, motivation starts with the school’s leaders, not just the teacher. Understanding where motivation begins will help educators become successful. Klug (1989) noted that leaders “…are shaping the school’s instructional climate…which in turn shapes the attitudes of teachers, students, parents, and the community at large toward education” (as cited in Renchler, 2000, p. 1).

Motivation can lead to success for both the student and the teacher. Teachers struggle with learner motivation along with classroom discipline. Many have overlooked the idea that when learning increases, discipline problems decrease. Until the late 1980s, inservice education, along with research and theory in the area of classroom management and school discipline ignored the relationship between student behavior and students’ attitude toward learning. The classroom teacher focused on how to increase on-task behavior, but paid little attention to whether the curriculum and instructional methods motivated the students to learn (Jones & Jones, 1990). In order for learning to occur, motivation needs to be present. Stimulating student motivation is a constant process that requires creativity and energy (Renchler, 2000).

Research suggests that student motivation to learn is an acquired competence developed through general experience but stimulated most directly through modeling, communication of expectations, and direct instruction or socialization by others (especially parents and teachers).... According to this view, teachers are
not merely reactors to whatever motivation patterns their students had developed before entering the classrooms but rather are active socialization agents capable of stimulating the general development of student motivation to learn and its activation in particular situations (Brophy, 1987, pp. 40, 41 as cited in Lumsden).

The implementation of technology into the classroom is changing the way we teach and the way students learn. Technology can play a vital role in enhancing student motivation. A useful way to reach students is through technology. Howland, Laffey and Espinosa (1997) stated, “Computers and related technology, such as electronic games, are becoming as much a part of early childhood as paints, blocks and books have been” (p. 1). Classrooms worldwide have access to technology, but the level of accessibility to technology is differing. With the types of technology constantly changing, so does the accessibility. The rapid changes in technology are changing our society.

Throughout history, new technologies have altered the existing social order, economy, and power structure. “Technology” is any tool or medium that helps people accomplish tasks or produce products more efficiently, and computers are only the latest in a long line of innovations-going back to axes and fire-that have changed the way humans interact with the world and with each other (Healy as cited in Callison, 2002, p.36).

Computers are changing the traditional classrooms. The role of the teacher who uses the computer has changed from that of a lecturer, to that of a mentor. As computers have been brought into the classroom educators in Wright, Stallworth and Ray’s (2002) study report, “… bringing technology into the classroom is extremely important because it will motivate students. Not only do the students find the lessons more interesting, but
they will benefit from the technology use by becoming familiar with everything” (p.4).

The teachers and students are changing their roles in the classroom. Computers allow for the classroom to be more student-centered and less teacher-centered. Once again educators in Wright, Stallworth, and Ray’s (2002) study support this movement, “Technology facilitates whole language and student centered classrooms and helps assess different learning styles” (p.4). Technology is not only used to motivate students to learn, but also to address diverse learning styles (Wright, Stallworth & Ray, 2002). Technology should be used as a tool to advance the learning process by evoking the student’s motivation.

Methodology

In researching the use of technology to motivate learners, the author used many valuable resources. There is an overwhelming amount of research on learner motivation. The University of Northern Iowa Rod Library and its website were good starting points for the research. Some of the resources accessed through the Rod Library web site were the Educational Resources Information Center (ERIC) databases, Education Full Text, Expanded Academic ASAP, and E*Subscribe: ERIC Documents. The researcher also browsed the Internet. Internet search engines found hundreds of web sites dealing with the phrases “learner motivation” and “technology.” One requirement for credible Internet pages was the information had to have cited references. References found on Internet sites were also deemed reliable if they were in the “.gov” or “.edu” domains and contained a bibliography of resources. Most of the published articles and Internet pages that were accessed contained references to many of the same bodies of research. This added to the reliability and creditability of the collected information. Published work that
included references to research was considered credible and worthy of reference in this paper.

**Analysis and Discussion**

There are many definitions of student motivation and for the purpose of this paper student motivation will be defined as "...the students' desire to participate in the learning process" (Lumsden, 2000, p.1). Research has identified two types of motivators, intrinsic and extrinsic. An intrinsically motivated student, according to Lepper, does an activity "for its own sake, for the enjoyment it provides, the learning it permits, or the feelings of accomplishment it evokes" (as cited in Lumsden, 2000, p.1). Computers are intrinsically motivating. Bergen (1999/2000) states, "The use of graphics, sound, color, and CD-ROM has increased students' interest in this media" (as cited in Guha & Leonard, 2002 p. 2).

Lepper's study shows a student who is extrinsically motivated performs "in order to obtain reward or avoid some punishment external to the activity itself" (as cited in Lumsden, 2000, p.1). Stickers, grades, teacher approval are all examples of extrinsic motivators. According to experts, parents and teachers should not overlook either extrinsic or intrinsic motivators. For the long-term, however, it is the intrinsic motivators that will be most effective in promoting learning as students get older (Gonder, 1991).

Researchers have studied many areas that they believe are important in order for student motivation to occur. Even though the classroom and school environment has changed over the years, students and the need for motivation have not. The author found throughout several articles and numerous years that researchers have had the same ideas about necessary factors for learner motivation. This paper will examine three
components needed for motivation: personal relationships, shared responsibility, safety and how technology relates to these three areas, as well as the role of expectancy theory in motivation.

*Personal Relationships*

Research shows that a relationship of trust and respect must be present in order for student motivation to occur. Every time the student enters the classroom teachers need to work on building a personal relationship with each and every student. Scheidecker and Freeman (1999) believed even on the worst of days, teachers need to let students know that they enjoy being with them. This is as simple as a warm smile with a brief conversation about the student's life outside of school. According to research this simple step is the first step to building student motivation. Scheidecker and Freeman (1999) suggested that teachers can evaluate themselves about knowing their students and building a caring student-teacher relationship by looking around the classroom and identifying a topic of casual conversation that he or she could discuss walking down the hall with a student. Students in a trusting relationship with teachers view teachers as genuine, real people, accepting, viewing students as worthy individuals in their own right, and empathetic with the students' point of view. Students also look for politeness, respect, helpers with personal problems and schoolwork and someone who goes the extra mile in a caring teacher. Teachers need to model for students the things they expect. Students see how teachers treat each other and other students helping create a risk free climate. A climate must be present in school that allows people to fail without feeling like failures. The climate needs to be safe and the students have to believe they can learn
and should be expected to learn. Technology is a tool that can help the teacher create a friendly, caring environment that allows students to take risks.

When using technology the most important factor of student attitudes is the teacher. Only the teacher can create a friendly, caring environment in which students feel secure and willing to accept the many learning challenges they will face. However, technology will enhance the environment created by the teacher. Carefully designed software products will afford students ample control over their learning environment, will excite students and hold their interest, and will provide engaging learning experiences that are unavailable in the traditional classroom. Quality teaching and quality software, together, can improve student self-concepts and student attitudes toward learning (Interactive Educational Systems Design, n.d, p.35-36).

Shared Responsibility

Motivation does not start with the student, it begins with the teacher. Scheidecker and Freeman (1999) recommend taking the we approach to motivation. Teachers are quick to blame low scores earned by their students on lack of effort. In the we approach, the teacher and the students share responsibility for both successes and failures and need to work together cooperatively building respect and trust leading to motivation because students will want to please their friends and receive their friends' (teacher's) approval.

The teacher should act as a coach for the students. When a football team has a record of 2 wins and 9 loses, this not only reflects the players record, but the coach's record. This is a team (we) approach. A motivational coach will approach the team with
statements like “The scores show that we need a new plan of attack,” or “This is what we’re going to do differently this time” (Scheidecker and Freeman, 1999, p. 122).

Research shows that motivation is also increased when students are actively involved in the learning process. Piaget stresses that learning must involve doing. Children learn what they do rather than what they see or hear. Students who are involved with their learning enjoy their work and will produce better work than will students who are responding obediently in order to receive reinforcement (Jones & Jones, 1990). These authors support the research that intrinsically motivated students will outperform extrinsically motivated students. The Southwest Educational Development Laboratory (1999) looked at students who were involved with their own learning using technology and found that

Students in technology-supported classrooms are armed with powerful tools to help them gather information, consult with colleagues, and present their findings. Their autonomy and confidence increase as they rely less on their teacher and more on their own initiative for knowledge-creation. Technology enables students to manipulate information in a manner that accelerates both understanding and the progression of higher-order thinking skills. As students gather more real-world data, share their findings with learners beyond their school, and publish their findings to the world, their role broadens from investigators of other products to designers, authors, purveyors, and publishers of their own work (Chapter 3, p. 4).

The integration of technology in curriculum allows learning to be centered on the student. A student-centered environment allows learners to be in control of their
learning. Callahan and Switzer (2003) stated, "Student-centered learning (SCL) places the student (learner) in the center of the learning process. In student-centered learning, students are active participants in their learning rather than passive recipients; students are more intrinsically than extrinsically motivated; learning is more individualized than standardized (p.1). Students are motivated when they are in control. Computers can support the variety of ways learners construct their own understanding. "Students can build on their own understanding by using computers as resource tools, as work stations for individual learning, or as communication channels to share their ideas with other learners" (Southwest Educational Development Laboratory, 1999, Chapter 3, p. 2).

Teachers also need to let students know how what they are learning applies to their lives. Giving students relevant, real-life situations is a high motivator. Understanding how curriculum relates to their lives will help them retain what they were taught. Students see the purpose behind what they are learning. Authentic learning allows students to partake in real life situations. Authentic learning happens when students are engaged in authentic tasks. Relevant tasks that have real purpose are authentic. Educators need to find ways to “hook” new ideas to what their students already know, thus helping them to remember information. Research comments on how important it is to help students understand the relationship between their schoolwork and the world outside of school (Jones & Jones, 1990). Educators using authentic tasks focus on showing students this relationship. "Authentic tasks enable students to make sense of and apply what they have learned and to establish clear connections between what they have learned in schools and the world in which they live" (Martin-Kniep, 2000, p. 26). When students have a definite aim they will enjoy the activity much more than if they do
not have an aim. Students need to be aware of the goal of each lesson, where they are headed with what they are doing and why they are doing it.

Giving students experience in selecting appropriate technology tools and in applying technologies such as word processors, spreadsheets, hypermedia, and network search tools to their work supports the performance of complex authentic tasks and provides experiences that prepare students for the world outside of school. We call these uses of technology authentic because students are using them for the same kinds of purposes and in the same ways that adults would use technology outside the school walls (U.S. Department of Education, 2000, p. 1).

Authentic learning is essential in preparing students to function successfully in the technological world in which they live. Authentic learning allows students to internalize what they have learned. Authentic learning not only helps motivate students, but also engages them in higher-order critical thinking. “Authentic tasks are more likely to motivate students to undertake and continue the work that real learning requires. Students are more likely to use the real world knowledge and the skills of higher-order thinking and problem solving that authentic achievement engenders” (Keefe & Jenkins, 1997, p. 57). Students involved in an authentic task use elaborate communication and exhibit higher-order thinking. Authentic tasks cover a wide range of content, utilize multiple strategies, result in products, and typically take up more time than traditional learning tasks (Martin-Kniep, 2000).

Teachers also need to have high expectations for their students in order to motivate them. Gonder (1991) suggested that when teachers believe all students can learn, and have high expectations for all of them, then the majority of students will learn
to their potential. Research has shown this is where many teachers do not understand the Pygmalion effect or the self-fulfilling prophecy (SFP). Brehm and Kassin (1996) define the Pygmalion effect as "... the idea that one's expectations about a person can eventually lead that person to behave and achieve in ways that confirm those expectations" (as cited in Tauber, 2000, p. 1). The self-fulfilling prophecy was supposed to be a meaningful pedagogical tool to express positive expectations, and avoid negative expectations. When teachers mark a student ahead of time as a troublemaker, or self-centered, then the self-fulfilling prophecy is started in a negative way. The self-fulfilling prophecy works in just the opposite way too. Teachers may classify a student as a cooperative worker, a leader, or a self-starter, then the positive prophecy is there. Tauber (2000) recommended when teachers do this pegging of students, treatment of these students would vary depending on if it were a positive or negative prophecy. This pegging frequently contributes to the success or failure of a student. Teachers will often get what they expect from their students when they use the self-fulfilling prophecy. If a poor student, in the teacher's eyes, did exceptionally well on a test, would the teacher be quick to rescore the test or consider the student may have cheated? This is the self-fulfilling prophecy in motion. Technology does not use the self-fulfilling prophecy to judge the student. When a child is given an opportunity to use technology, he/she is not being judged by the technology. The software side of technology even allows for multiple levels of learners.

Many software programs available are designed to capture the students' interest and enhance their learning at the same time. With a variety of skill levels available, children can feel comfortable working at their own pace while also
building confidences in themselves as they move through the levels of a program (Guha & Leonard, 2002, p.3).

Safety

According to research, another area necessary for learner motivation is safety. Students need to feel safe in their learning environment. Many students enter the classroom with many failures already in their lives. Failures they have no control over; maybe the failure of their parents' marriage. Teenagers also enter the classroom very insecure from all the pressures they face in their classrooms and professional lives; drugs, sexuality, gangs, race, and grades. Self-esteem plays a big role in the life of a child in the classroom. The fear of failing holds back motivation. Canfield and Wells (1994) offered that if a child has a history of failure he/she would be reluctant to risk failure again. If a child feels like a failure, his/her self-esteem will not build. This feeling of failure will hinder the student's motivation.

As part of a comprehensive evaluation of computer-based instruction (mostly integrated learning systems) in New York City, Swan and others determined that educationally disadvantaged students were more motivated and less threatened when learning on computers than when learning in regular classroom settings (Interactive Educational Systems Design, n.d, p.35).

These disadvantaged students were motivated because they felt safe and were in control. Recent research confirms the potential of educational technology to improve students' attitudes about themselves and learning. DeGraw (1990) found that fourth grade students grew in self-esteem and self-confidence when computers were placed in their homes and schools (as cited in Interactive Educational Systems Design, n.d).
Previous research suggests that interaction with educational technology may lead to improved self-concept because: (1) Successful experiences with technology give students a feeling of control over their own learning. (2) Such experiences may increase students' sense of confidence in their abilities to perform in specific learning situations (Interactive Educational Systems Design, n.d, p. 29).

Apple has been helping to put children in control of their own learning with their ongoing project Apple Classrooms of Tomorrow (ACOT). When students are allowed to be in control of their own learning they are building self-esteem. Apple chose K-12 schools across the United States to partake in their investigation on the role computers play in K-12 education. One classroom was provided with two computers for every student and teacher. One computer was for school use, while the other computer was for home usage. Apple found the classrooms became more student centered and the role of the teacher changed to that of a mentor. The research done by Apple showed that when students were in control of their learning, their attitudes toward learning improved as well as their productivity (Dwyer, 1994). Phelan (1989) reported more findings, “Children interacted with one another more frequently while working at computers. And the interactions were different—the students spontaneously helped each other. They were curious about what others were doing. They were excited about their own activities, and they were intently engaged” (as cited in Dwyer, 1994, p. 2).

Scheidecker and Freeman (1999) point out how important it is to not only tell the students that as the teacher you will not let them fail, the teacher needs to show the students what she or he is talking about. The teacher must carry out promises. When working with technology the teacher doesn’t have to know everything. This allows the
teacher to show the students it’s fine not to know the answer and how to work through the problem. Teachers need to learn with their students and even from their students. In our technological society many students come into the classroom having experience with computers from home. This experience may allow the student to become the teacher.

When technology is used as a tool for accomplishing complex tasks, the issue of mismatch between technology content and curriculum disappears altogether. Technological tools can be used to organize and present any kind of information. Moreover, it is not necessary for the teacher to know everything about the tools that students use; students and teachers can acquire whatever technology skills they need for specific projects. In fact, one of the best things that teachers can do with respect to technology is to model what to do when one doesn’t know what to do. (Means & Olson, 1994, p.1)

As an educator, the author has promised each student that no other student will interfere with another’s right to feel safe or right to learn. Jones and Jones (1990) support this idea.

*Expectancy theory*

According to Hancock (1995) “Expectancy theory views people as purposeful beings who have in accordance with their expectations that their efforts will result in outcomes they value” (as cited in Guha & Leonard, 2002). In this theory, “effort” is defined as the measurable motivational outcome. For “effort” to occur, the person must value the task and believe he or she can succeed at the task (Small, 2000). As with every instructional situation, the learning task needs to be presented in an engaging and meaningful way that promotes positive expectations in order to be successful.
The theory purports that the amount of effort an individual will exert depends upon the relationship of three factors: expectancy (the likelihood of the success of performing a specific behavior), instrumentality (the likelihood that a particular action will result in a certain outcome), and valence (the positive or negative value a person places on those outcomes). Motivation then is a product of the values associated with expectancy, instrumentality, and valence (Guha & Leonard, 2002, p.1).

Teachers can influence one or more of these values to motivate students to learn. Technology has the potential to engage students at high levels because they perceive that they will be more successful. The computer often offers instructional software that provides tutoring and cues to guide students when problems arise. This leads Guha and Leonard (2002) to believe that the teacher’s expectance for the students’ learning should be high. Students are reached instrumentality when teachers clarify the long and short-term benefits of the activity at hand. The society in which we live is no longer industrial based, but technology based so becoming familiar with technology means that students will be equipped with knowledge to enter the job market. The finally factor, valence, needs to be associated with the learning outcome. The majority of students are exposed to computers at home allowing students to be proficient with computers. At times the level of children’s expertise exceeds that of the teacher. Teachers can then tap children’s expertise, allowing them to demonstrate how a particular program works, and helping to increase the positive value associated with technology. The possibilities are endless when it comes to integrating the use of the computers into the classroom helping with learner motivation (Guha & Leonard, 2002).
Conclusion & Recommendations

Motivating students to learn, to enjoy learning, and to want to learn more has assumed greater importance in recent years. Technology plays an important role in achieving this goal. Technology is motivating because it can gain a learner's attention, engages the learner through production work, and increase perceptions of control (Roblyer, 2003).

Success with learner motivation comes with a personal relationships established, shared responsibility communicated, and the students feeling safe in the classroom (Scheidecker & Freeman, 1999). There is no simple or single answer to increasing learner motivation. Students come from a multitude of backgrounds with a variety of learning styles. With this diversity comes the need for multiple approaches and steps to motivation. Educators need to find methods of motivation that work best in the classroom during instruction. Motivation in the classroom should combine both intrinsic and extrinsic motivators.

Educational technology has been found to produce positive effects on student attitudes toward learning and on student self-concept. When using computer-based instruction students feel more successful in school because of increased self-confidence and self-esteem allowing them to be more motivated to learn. This was particularly true when the technology allowed students to control their own learning (Interactive Educational Systems Design, n.d).

Today's educators are integrating technology into learning activities in order to enhance lessons and increase achievement. Schacter (1999) found that students' attitude toward learning improved when computers were used for instruction. No longer can the
computer be held in reserve for specific computer classes. Computers and other technology must be made available to all students to be used as a tool for learning and increasing motivation.

Authentic learning is important in fostering lifelong learning. The use of real world tools, relevant experiences, and meaningful data instill a sense of purpose to classroom activity. Authentic tasks provide meaning and establish connections to what students are learning. Authentic learning deeply engages students in their learning. Students are engaged in real world problems, issues, and tasks during authentic instruction involving higher-order thinking.

Educators have found students are enthusiastic when using technology, which increases motivation. When a learner’s motivation is stimulated, learning is likely to occur. In today’s technological world, technology is a way of life for students. Technology used correctly is extremely motivating while engaging students in higher-order thinking. Richardson (2002) reports, “Children are always enthusiastic and show heightened motivation when technology is used in the classroom and in my experience it creates greater attention and enthusiasm to participate and respond” (p. 4).

Motivation is the key to achieving academic excellence. The goal in the classroom is to foster student achievement as well as lifelong learning. In order to achieve these goals motivation needs to be aroused and sustained. The obvious reason that a teacher would want to motivate students would be to promote achievement and academic excellence.
References


Lumsden, L. (2000). *Student motivation to learn* [online]. Available:


Renchler, R. (2000). *School leadership and student motivation* [online]. Available:


Schacter, J. (1999). *The impact of education technology on student achievement: What the most current research has to say* [online]. Available:
  http://www.mff.org/publications/publications.taf?page=161


